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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/084,369 | 02/28/2002 | Katsunori Hirase | 020199 | 6286 |

23850 7590 06/13/2005

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EXAMINER

SETH, MANAV

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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2625

DATE MAILED: 06/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/084,369 | Applicant(s) HIRASE, KATSUNORI | |
| | Examiner Manav Seth | Art Unit 2625 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The amendment filed on 25 April 2005 has been entered in full.
2. Based on Applicant's amendments to the drawings, the objection to the drawings has been withdrawn.

Response to Arguments

3. Applicant's arguments filed on fourth paragraph of page 11 of the amendment filed on 25 April 2005 have been fully considered, but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-4 and 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu, U.S. Patent No. 6,584,154 further in view of Guenter et al., U.S. Patent No. 6,072,496.

Regarding **Claim 1**, Wu discloses:

- an image reproduction portion receiving said compressed image data to generate reproduced image data where image reproduction portion comprises of a variable-length decoder (VLD) 2, an inverse quantizer (IQ) 4, a resolution converting IDCT processor (RCIDCT) 6 and an adder 8 (figure 1, column 7, lines 1-25).
- a data compressor 10 (an orthogonal transform and compression portion) which compresses the output picture signal S8 from said image reproduction portion (column 7, lines 39-41). Wu further discloses the use of orthogonal transform such as Hadamard transform for data compression on each block (column 7, lines 1-3; column 17, lines 1-11) and further provides the details of data compression which comprise rounding of values of blocks using a predetermined threshold level (column 17, lines 23-56) and further provides the adjustment or switching of threshold values (column 17, 59-71).
- A memory 12 (storage) receiving an output from said orthogonal transform and compression portion for storing the reference image data for predictive coding (column 7, lines 42-44; column 2, lines 25-40).

Claim 1 additionally recites the limitation "said switching of the rounding system corresponding to alternating between a first rounding operation biased to increase a numeral value in absolute value and a second rounding operation biased to decrease the numeral value in absolute value". Wu as discussed before does provide the teaching of rounding of values of blocks but does not specifically teach the recited limitation. This claim limitation as recited in claim 1 is broad enough to interpret as a rounding operation which is basically a very well known simple arithmetic operation performed by a simple rounding circuit, which will **alternate (select one or another)** between (1) a first rounding operation biased to increase a numeral value in absolute value and (2) a second rounding operation biased to decrease the numeral value in absolute value. The rounding operation, as read above, is basically a very well known simple arithmetic (mathematical) operation and integration of this very well known operation in electronic computing devices is very well known and is further supported by Guenter. Guenter discloses the use of this rounding operation in image quantization for image compression where a rounding function converts a real number to an integer, for example, **round(4.73) = 5** and **round(3.21) = 3** (col. 22, lines 42-59). It is clear from the above disclosure by Guenter that (1) when a value (or a number) such as, **for example 4.73**, the system would perform **round(4.73) = 5**, therefore selects **rounding up** (increasing a rounding operation which is biased to increase a numeral in absolute value) rather than **rounding down** (selecting rounding operation biased to decrease the numeral value in

absolute value) and (2) when a value (or a number) such as, **for example 3.21**, the system would perform **round(3.21) = 3**, therefore selects **rounding down** (increasing a rounding operation which is biased to increase a numeral in absolute value) rather than **rounding up** (selecting rounding operation biased to decrease the numeral value in absolute value). Therefore, it would have been obvious for one of ordinary skill in the art at the time of invention was made to use the Guenter's teachings of using rounding operation in image compression in the invention of Wu because both references teach image compression and Guenter further teaches a very well known rounding operation which is very widely used in image or video compression which would further enhance image compression by quantization (See Guenter; col. 22, lines 42-43; Abstract: last four lines).

Claim 2 recites "the apparatus according to claim 1, wherein said orthogonal transform and compression portion effects Hadamard transform as said orthogonal transform". Wu discloses the use of orthogonal transform such as Hadamard transform for data compression on each block (column 7, lines 1-3; column 17, lines 1-11).

Claim 3 recites "the apparatus according to the claim 1, wherein said orthogonal transform and compression portion switches for each said predetermined data transform block a level of a threshold value for a rounding operation effected after said orthogonal transform". Wu discloses the transform processor 80 which performs a

Hadamard transform on each block and then coding unit 82 receives the transformed block for further providing the rounding operations using threshold values (column 17, lines 25-62).

Claim 4 recites “the apparatus according to claim 3, wherein said orthogonal transform and compression portion effects Hadamard transform as said orthogonal transform”. Claim 4 has been analyzed and rejected as per claim 3 and 2.

Claim 7 recites the method to be performed on the apparatus as recited in claim 1. Claim 7 additionally recites the limitation “generating from said second reproduced image data stored in said reference image memory said reference image data corresponding to said first reproduced image data”. Wu further discloses generating of the second reproduced image data S16 from memory 12 by decompressing it by decompressor 14 and then sending it to the adder 8 through motion compensator, where it is added to the first picture signal S8 to generate the output picture signal S8 which is the current picture signal (figure 1; column 7, lines 37-66). All other limitations in claim 7 had been analyzed and rejected as per claim 1.

Claims 8-10 have been similarly analyzed and rejected as per claims 7 and 2-4.

6. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu, U.S. Patent No. 6,584,154, further in view of Guenter et al., U.S. Patent No. 6,072,496 and further in view of Saito, U.S. Patent No. 5,045,925.

Regarding claim 5, Wu discloses the said compressed image data includes a luminance signal component and a color difference signal component (column 18, lines 40-43) and further discloses the encoding and compression of these luminance and color difference components using compressor 10, which uses Hadamard transformation as explained in the rejection of claim 1 (column 18, lines 40-57; column 17, lines 1-12).

Wu does teach the encoding of color-difference components but does not teach truncation for AC component of the color-difference and neither does Guenter teach the same. However, Saito discloses the truncation of the AC component where the truncation is performed after Hadamard transformation is applied to the block (column 3, lines 39-43 and lines 28-30).

Therefore, it would have been obvious for one skilled in the art at the time of invention was made to include the step of truncating AC component by Saito in the combined invention of Wu and Guenter. One would have been motivated to include the step of truncating AC component by Saito in the combined invention of Wu and Guenter because both Saito and the combined invention of Wu and Guenter are directed towards the field of encoding image signals using orthogonal transformation and Saito further provides the truncation of AC components because the lower-frequency

component is more important as data than the higher-frequency components to retain the quality compressed data and this would increase the compression ratio (See Saito, column 4, lines 1-8).

Claim 6 recites "the apparatus according to claim 5, wherein said orthogonal transform and compression portion effects Hadamard transform as said orthogonal transform". Claim 6 has been analyzed and rejected as per claim 5.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Juri, U.S. Patent No. 5,355,167 discloses orthogonal transform coding. Juri further discloses in figure 19 element 99 which performs rounding for quantizing (col. 13, lines 30-55).
- Higginbottom, U.S. Patent No. 6,118,724 discloses memory controller architecture used in image compression, which further discloses rounding operation in figure 137, element 1835.
- Daly et al., U.S. Patent No. 4,774,574 discloses a adaptive block transform image coding method and apparatus which further provides image compression using rounding (col. 3, lines 55-67).

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

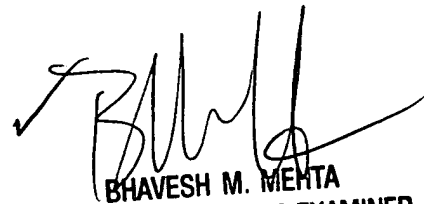
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Manav Seth whose telephone number is (571) 272-7456. The examiner can normally be reached on Monday to Friday from 8:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's Supervisor, Bhavesh Mehta, can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2625

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Manav Seth
Art Unit 2625
June 3, 2005



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SUPERVISORY PATENT EXAMINER
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